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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/049,865

06/06/2002

Thomas Franz

449122021000

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06/23/2004

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EXAMINER

LAIR, DONALD M

ART UNIT

PAPER NUMBER

2858

DATE MAILED: 06/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/049,865	Applicant(s) FRANZ ET AL.	
	Examiner Donald M. Lair	Art Unit 2858	

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.  
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-9 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☒ The drawing(s) filed on 06 June 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☒ All b) ☐ Some \* c) ☐ None of:  
 1. ☒ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to because Figure 1 shows element 14 and element 26 as being separate while Figure 3 shows that element 26 comprises element 14.
2. The drawings are objected to because multiple boxes don't have meaningful labels. This applies to Figure 1, elements 17, 24 and 28 and Figure 3, elements 32 and 33.
3. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term “series” in Claim 5 is used by the claim to describe the electrical relationship between the coil 14 and the resistor R wherein there are multiple electrical paths for a current through the coil 14 to go, while the accepted meaning of “series” requires a single current loop with a single current path. The term is indefinite because the specification does not clearly redefine the term.

6. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear which element is being referred to by the newly added limitation of “... which is a component of the actuator.” Specifically, the limitation could be referring to the “at least one coil”, “the resistor” or “the supply line.”

#### ***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 – 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Tazawa (US-4,989,150).

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9. In regards to Claim 1, Tazawa discloses a method for determining the offset error of a measurement, where the measurement is subject to such an offset error of a coil current of an electromagnetic actuator, comprising:

measuring the coil current through a corresponding coil when the actuator is in a final position in which the coil is not supplied with current during the operation of the actuator (Column 3, lines 20 – 25 and 44 – 49; Fig. 5), wherein it is inherent that the fuel injector is in a final position when it is not being supplied by current (Fig. 5, Injector Load Current at time  $T_0$ ); and

providing the value obtained as the offset error (Column 5, lines 44 – 50).

10. In regards to Claim 2, Tazawa discloses a method comprising the steps described above, wherein the coil current is measured by potential tapping before and after a resistor connected in series with the coil, wherein

the potential taps are being fed to a differential amplifier, and a constant value is added to a value output by the differential amplifier (Fig. 4A, element 43c).

11. In regards to Claim 3, Tazawa discloses a method comprising the steps described above, wherein the actuator has two coils respectively assigned to the final position, and

the coil current through the coil not assigned to the present final position is measured to determine the offset error (Figs. 6A – 6C).

12. In regards to Claim 4, Tazawa discloses a method comprising the steps described above, further comprising:

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supplying the coil assigned to the final position with a capture current and a holding current such that the actuator is transferred into the final position (Column 5, line 51 – Column 6, lines 7).

13. In regards to Claim 5, Tazawa discloses a circuit for determining the offset error of a measurement, the measurement subject to an offset error of a coil current  $I$  of an electromagnetic actuator, the circuit comprising:

at least one coil with a resistor connected in series into a supply line of the coil (Fig. 3, elements 12, 12a and 43; Fig. 4A);

a differential amplifier to which the potential on both sides of the resistor is fed (Fig. 4A, element 43c); and

a control circuit which evaluates the output of the differential amplifier when the coil is not carrying any current during the operation of the actuator, and the value obtained is output as the offset error  $I_o$  (Column 5, line 44 – Column 6, lines 7).

14. In regards to Claim 6, Tazawa discloses a circuit comprising the elements described above, wherein the output of the differential amplifier is fed together with the output of a constant-voltage source to an adding element such that an offset error of a specific polarity is obtained. (Fig. 3, element 24).

15. In regards to Claim 7, Tazawa discloses a circuit comprising the elements described above, wherein the actuator has first and second coils assigned to a final position, and

a resistor is connected in the supply line to each coil, the differential amplifier taps the voltage dropping across the resistor, and the control circuit evaluates outputs of the differential amplifiers (Fig. 3, elements 12).

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16. In regards to Claim 8, Tazawa discloses a circuit comprising the elements described above, wherein the control circuit for supplying current to the first and second coils transfers the actuator into a final position (Column 5, lines 44 – 61), and

the first coil assigned to the final position carries a capture current and a holding current, and the control circuit evaluates the output of the differential amplifier of the second coil (Figs. 3, 4A and 6C).

17. In regards to Claim 9, Tazawa discloses a circuit comprising the elements described above, wherein the offset error  $I_o$  is determined and low-pass-filtered multiple times (Fig. 3, elements 12 and 12a).

### ***Response to Arguments***

18. Applicant's arguments filed 03/23/04 have been fully considered but they are not persuasive.

19. In regards to Claim 1, the Applicant asserts that “the output signal is being read as the offset current when the pulse signal  $P_{inj}$  is not generated. There is no disclosure of the actuator of the injector being located in a final position as the mechanical construction of the injector is not mentioned.” The Examiner respectfully disagrees with this position. The claim limitation defines the “final position” as a situation “in which the coil is not supplied with current during the operation of the actuator.” Figure 5 of the Tazawa reference clearly shows this limitation since the coil current is measured at  $T_o$ , at which time no current is being supplied to the coil, to obtain a reference measurement (Column 5, lines 44 – 61).

20. In regards to Claim 5, the Applicant asserts that “amplifier 43c of Tazawa is attached to the coil 43a of the detection sensor 43 and not to the coil 12 of the injector.” Since the newly

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added limitation of “which is a component of the actuator” fails to particularly point out what it is directed towards it clearly subject to multiple interpretations. For example, the supply lines coming from injector coils 12 (Tazawa, Fig. 3) are a component of the actuator and are connected to all elements 12, 12a and 43.

21. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

22. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.



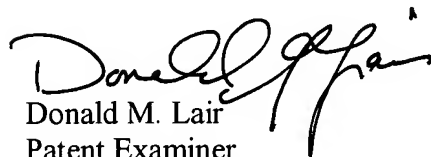
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***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald M. Lair whose telephone number is (571) 272-2232. The examiner can normally be reached on Monday - Friday, 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on (571) 272-2233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Donald M. Lair  
Patent Examiner  
Art Unit 2858  
June 17, 2004

  
**ANJAN DEB  
PRIMARY EXAMINER**